



Volunteer Lake Assessment Program Individual Lake Reports

CAPTAIN POND, SALEM, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	960	Max. Depth (m):	8.6	Flushing Rate (yr ⁻¹)	2.1
Surface Area (Ac.):	90	Mean Depth (m):	2.5	P Retention Coef:	0.65
Shore Length (m):	2,600	Volume (m ³):	874,000	Elevation (ft):	156

TROPHIC CLASSIFICATION

Year	Trophic class
1987	MESOTROPHIC
2002	MESOTROPHIC

KNOWN EXOTIC SPECIES

Variable Milfoil

The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm

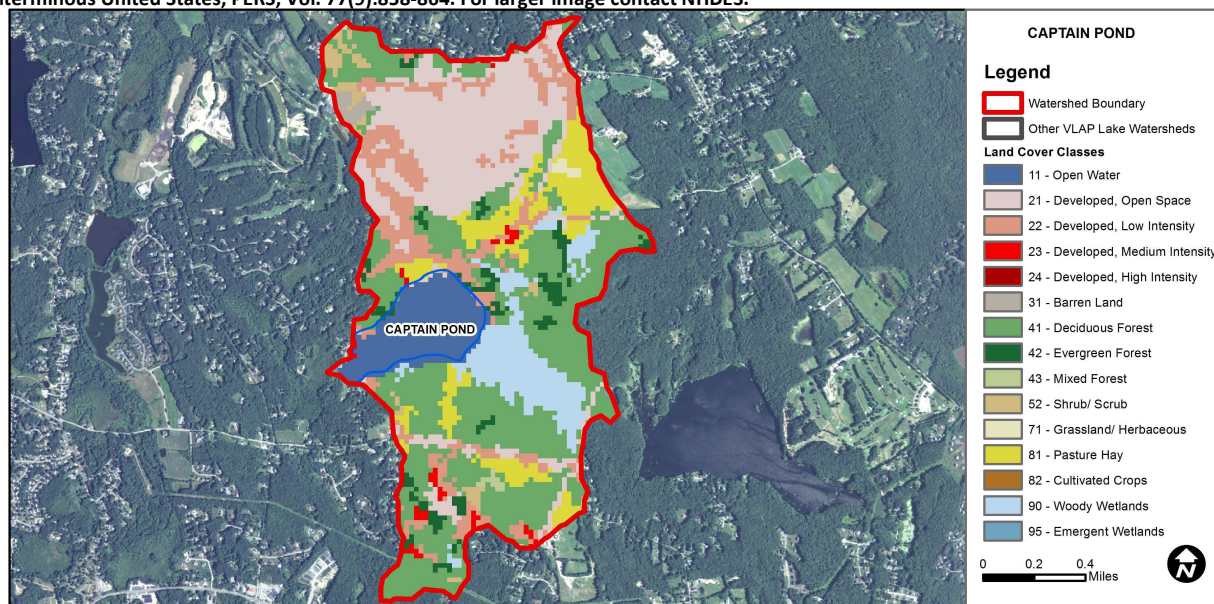
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	The calculated median is from 5 or more samples and is > indicator and the chlorophyll a indicator is exceeded.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Oxygen, Dissolved	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Dissolved oxygen saturation	Slightly Bad	There are >10% of samples (minimum of 2), exceeding criteria.
	Chlorophyll-a	Slightly Bad	The calculated median is from 5 or more samples and is > indicator.
Primary Contact Recreation	Escherichia coli	Good	There are geometric means and all geometric means are < geometric mean criteria; and there has been a single sample exceedance.
	Chlorophyll-a	Good	There are at least 10 samples with one, but < 10% of samples, exceeding indicator.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

CAPTAIN POND - GIRLS INC OF HAVERHILL BEACH	Escherichia coli	Cautionary	There are no geometric means and there is one single sample exceedance. More data needed.
CAPTAIN POND - CAMP Y WOOD BEACH	Escherichia coli	Cautionary	There are no geometric means and there is one single sample exceedance. More data needed.
CAPTAIN POND - CAMP HADAR	Escherichia coli	Bad	There are >=1 exceedance(s) of the geometric mean and/or >=2 single sample criterion exceedances. One or more exceedance is >2X criteria.
CAPTAIN POND - CAMP OTTER SWIM AREA BEACH	Escherichia coli	Bad	There are >=1 exceedance(s) of the geometric mean and/or >=2 single sample criterion exceedances. One or more exceedance is >2X criteria.
CAPTAIN POND - CAPTAIN'S BEACH	Escherichia coli	Bad	There are >=1 exceedance(s) of the geometric mean and/or >=2 single sample criterion exceedances. One or more exceedance is >2X criteria.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	7.86	Barren Land	0.72	Grassland/Herbaceous	0.35
Developed-Open Space	20.9	Deciduous Forest	34.62	Pasture Hay	9.1
Developed-Low Intensity	11.8	Evergreen Forest	3.53	Cultivated Crops	0
Developed-Medium Intensity	1.09	Mixed Forest	0.25	Woody Wetlands	8.07
Developed-High Intensity	0	Shrub-Scrub	1.75	Emergent Wetlands	0.08



VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

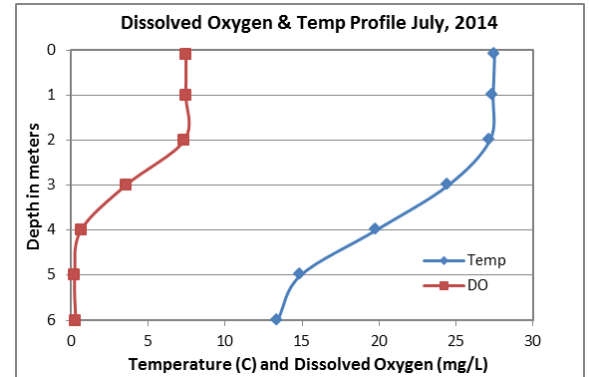
CAPTAINS POND, SALEM

2014 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (Refer to Table 1 and Historical Deep Spot Data Graphics)

- **CHLOROPHYLL-A:** Chlorophyll levels were slightly elevated, greater than the state median, and increased from June to July. Historical trend analysis indicates highly variable chlorophyll since monitoring began. Cyanobacteria were the dominant algae in the phytoplankton sample. Watch for cyanobacteria blooms or surface scums in late summer or early fall.
- **CONDUCTIVITY/CHLORIDE:** Conductivity and chloride continue to be elevated and much greater than the state medians. However, historical trend analysis indicates significantly decreasing (improving) epilimnetic (upper water layer) conductivity since monitoring began. We hope to see this continue!
- **TOTAL PHOSPHORUS:** Deep spot phosphorus levels were low in June but were slightly elevated in July and may have contributed to the cyanobacteria growth. Historical trend analysis indicates relatively stable epilimnetic phosphorus with low variability between years. Inlet and Outlet phosphorus levels were also low in June but elevated in July, and nearshore stations also displayed the same pattern. July experienced above average rainfall and stormwater runoff likely contributed to the elevated phosphorus levels.
- **TRANSPARENCY:** Transparency decreased from June to July due to the increased algal growth. The 2014 average transparency improved slightly from 2013, however remained less than (worse) than the state median. Historical trend analysis indicates relatively stable transparency with moderate variability between years.
- **TURBIDITY:** Overall, pond turbidity levels increased in 2014 potentially due to the elevated algal growth as well as the above average rainfall received in July.
- **pH:** The 2014 pH levels were sufficient to support aquatic life, however hypolimnetic pH levels have historically been less than the desirable range of 6.5-8.0 units.
- **RECOMMENDED ACTIONS:** The decreasing conductivity trend is encouraging; keep educating watershed residents and local officials on best winter de-icing practices. Phosphorus levels increased in July potentially due to stormwater runoff from the above average rainfall in July. Educate watershed and shorefront property owners on ways to reduce stormwater runoff from their properties. DES' "Homeowner's Guide to Stormwater Management" is a great resource. Keep up the great work!

Station Name	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	Total P ug/l	Trans. m		Turb. ntu	pH
						NVS	VS		
Epilimnion	18.5	6.40	49	170.5	13	2.31	2.69	1.55	7.22
Hypolimnion				245.0	14			2.04	6.81
30 Plaisted Circle				247.5	16			2.92	7.08
7 Captains Dr			57	248.0	14			1.45	7.12
Boat Launch			56	248.0	15			2.42	7.14
Buzzell Cove				246.5	17			1.69	7.09
Camp Y Wood				242.0	10			2.19	7.17
Inlet			57	249.7	21			1.3	6.97
Outlet				245.5	29			1.59	7.01
YMCA				251.0	15			1.01	7.26

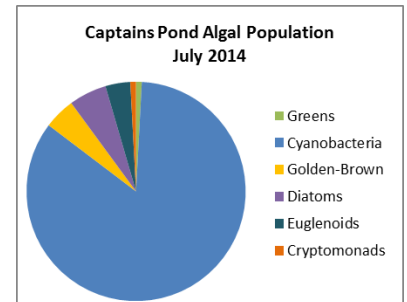


NH Median Values: Median values for specific parameters generated from historic lake monitoring data.

Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m³
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: between 6.5-8.0 (unless naturally occurring)



HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Improving	Data significantly decreasing.	Chlorophyll-a	Stable	Trend not significant; data highly variable.
pH (epilimnion)	Stable	Trend not significant; data highly variable.	Transparency	Stable	Trend not significant; data is moderately variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data show low variability.

